



US Army Corps  
of Engineers



# Biological Assessment For State Route:

Version: Proposed Revisions

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Prepared by:

# Executive Summary

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# 1. Introduction

## 1.1 Project Location

The general project location information is provided below:

State Route/Interstate:                      Mile Post Begin:                      Mile Post End:  
County:

The specific begin and end project location information is provided below:

### Begin Project

Section:                      Township:                      Range:  
Latitude:                      Longitude:

### End project (if part of a larger project)

Section:                      Township:                      Range:  
Latitude:                      Longitude:

## 1.2 Project Description

### 1.2.1 Project Overview

#### 1.2.1.1 Purpose and Need

### 1.2.1.2 Mitigation Requirements/Site(s)

### 1.2.1.3 Summary of Temporary and Permanent Impacts (Project Footprint)

**Table 1. Area and Lineal Distance (if applicable) of Temporary and Permanent Disturbance to Habitat**

Habitat Types to be Disturbed	Area (square feet) of Disturbance		Lineal Distance (feet) of Disturbance (if applicable)	
	Temporary	Permanent	Temporary	Permanent
Stream Channel				
Wetland				
Riparian				
Upland				
Other				
Other				
Other				
Other				

A summary description of the habitat types disturbed, as indicated in Table 1 (i.e. provide class of wetland and whether it is emergent, scrub-shrub or forested, etc) is provided below.

### 1.2.2 Overall Project Timeline

**Begin:**

**End:**

**Total No. of Working Days:**

Specify whether day or night work will occur and the duration of these activities.

### 1.2.3 Project Benefits

A summary description of project benefits is provided below.

### 1.2.4 Proposed Project Actions

- ☐ [Culvert Replacement \(Module 1\)](#)
- ☐ [Bridge Replacement \(Module 2\)](#)
- ☐ [Bridge Scour \(Module 3\)](#)
- ☐ [Pile Driving \(Module 4\)](#)
- ☐ [Bank Stabilization \(Module 5\)](#)
- ☐ [Safety Improvement \(Module 6\)](#)
- ☐ [Slide Abatement \(Module 7\)](#)

#### 1.2.4.1 Construction/Use of Detour

Will the project require the use or installation of a temporary detour (re-route, bridge, etc)? ☐ Yes  
☐ No

If yes, describe activities: ()

If no, a description of how traffic will be routed through or detoured around the project site is provided below:

#### 1.2.4.2 Construction Access (Access Road(s), Fill, Bridge(s), Barge(s)) and Staging Area(s)

Access to the project site will be by: ☐ Water ☐ Land

If by water, will a temporary construction bridge, platform, or barge be required to complete project activities: ☐ Yes ☐ No

If yes, describe activities (Note: complete Module 4 if this activity requires pile driving):

If a barge will be used as a staging/storage platform for construction materials, the materials to be stored and depth of water where barge will be staged are as follows:

The barge will be anchored as follows (anchor and chain, spuds, etc):

Will placement of any temporary fill be required for access or construction: ☐ Yes ☐ No

If yes, describe:

If by land, will Construction Access Road(s) be required to complete project: ☐ Yes ☐ No

If yes, describe the following, including the width, length and location of the access road(s):

- Area (square feet or acres) within 300 feet of stream that will be disturbed (if applicable).
- Area (square feet or acres) outside 300 feet of stream that will be disturbed.
- List number, species and size (dbh) of trees to be removed.

- Describe how the access road will be re-vegetated after construction.

Will Construction Staging Area(s) be required to complete the project: ☐ Yes ☐ No

If yes, describe the following:

- Will construction staging area(s) be within 300 feet of a stream: ☐ Yes ☐ No
- Area (square feet or acres) within 300 feet of stream that will be disturbed (if applicable).
- List tree and shrub species that will be removed. Include the size (dbh) of the trees to be removed.

#### **1.2.4.3 Grading/Recontouring/Reshaping**

Will grading/recontouring/reshaping of land occur as part of the project: ☐ Yes ☐ No

If yes, describe (amount of material to be moved, area to be recontoured, how it will be recontoured, etc.):

#### **1.2.4.4 Road Paving**

Road-paving activities associated with the proposed project include:

#### **1.2.4.5 Pavement Removal**

Pavement removal from the work area includes (area of pavement to be removed, rationale for removal, disposal of the pavement, etc.):

#### **1.2.4.6 Pavement Replacement**

Pavement replacement within the work area includes (area of existing pavement/impervious surface area to be replaced/retrofitted, rationale for replacement, etc.):

#### **1.2.4.7 New Impervious Surface Area**

**Water Quality Treatment  
Flow Control  
Drainage Installation**

**1.2.4.8 Disturbance to Vegetation/Clearing:**

Describe vegetation to be removed (i.e., species, numbers, sizes and condition of vegetation) and whether it is riparian or upland vegetation, as prompted below:

**Upland Vegetation:**

Temporary (i.e., area will be replanted with native vegetation or allowed to regenerate naturally):

Square Feet: Acres:

Vegetation to be temporarily removed includes (species, numbers, sizes and condition):

Permanent (i.e., area will be permanently affected by the project):

Square Feet: Acres:

Vegetation to be permanently removed includes (species, numbers, sizes and condition):

**Riparian Vegetation:**

Temporary (i.e., area will be replanted with native vegetation or allowed to regenerate naturally):

Square Feet: Acres:

Vegetation to be temporarily removed includes (species, numbers, sizes and condition):

Permanent (i.e., area will be permanently affected by the project):

Square Feet: Acres:

Vegetation to be permanently removed includes (species, numbers, sizes and condition):

**1.2.4.9 Disturbance to Other Upland Habitat Types:**

If applicable, describe other impacts to habitats that may be temporarily or permanently disturbed and the extent of disturbance to those habitats:

**1.2.4.10 Blasting, Drilling, Pile Driving or other Noise-Generating Activities**

Will noise-generating activities occur: ☐ Yes ☐ No

If yes, describe activities: ()

#### 1.2.4.11 Noise Attenuation

Will sound attenuation devices be used: ☐ Yes ☐ No

If yes, describe:

Will hydroacoustical monitoring occur: ☐ Yes ☐ No

If yes, describe the actual monitoring protocol (number of piles to be monitored, type of pile to be monitored, etc):

#### 1.2.4.12 Disturbance to Aquatic Habitats (wetlands/streams):

Will a Hydraulic Project Approval (HPA) be required for the project? ☐ Yes ☐ No

If no, explain:

If yes:

Has the WDFW issued an HPA for this project? ☐ Yes ☐ No

If yes, attach a copy of the HPA as an appendix.

If no, when will an HPA be obtained for this project?

Describe the temporary and permanent impacts to each aquatic habitat affected as prompted below.

##### **Wetlands:**

Temporary (i.e., area will be dewatered or otherwise affected temporarily during project activities) provide class of wetland(s) and whether it is emergent, scrub-shrub or forested:

Square Feet:

Acres:

Permanent (i.e., area will be permanently affected due to culvert extension or placement of spawning gravel) provide class of wetland(s) and whether it is emergent, scrub-shrub or forested:

Square Feet:

Acres:

##### **Streams:**

Temporary (i.e., area will be dewatered or otherwise affected temporarily during project activities) categorize streams by DNR listing:

Square Feet:

Acres:

Lineal feet of dewatering (if applicable. Note: If dewatering will occur, Stream Bypass/Dewatering or Separation of Work Area from Surface Water section below should be completed) categorize streams by DNR listing:

Permanent (i.e., area will be permanently affected due to culvert extension or placement of spawning gravel) categorize streams by DNR listing:

Square Feet:

Acres:

#### **1.2.4.13 Excavation below OHWM**

Will any streambed excavation or excavation below OHWM be required: ☐ Yes ☐ No

If yes, how many cubic yards of material will be excavated: \_\_\_\_\_ cubic yards.

Indicate the square footage below the OHWM: \_\_\_\_\_ square feet.

Indicate the square footage within the wetted perimeter: \_\_\_\_\_ square feet.

The type of material to be excavated includes:

Will vegetation be removed for the excavation: ☐ Yes ☐ No

If yes describe:

Describe activities:

#### **1.2.4.14 Placement of Fill below OHWM**

Will fill be required in the stream channel or below OHWM ☐ Yes ☐ No

If yes, how many cubic yards of material will be placed: \_\_\_\_\_ cubic yards.

The type of fill material to be placed includes:

Is material (eg. gravels or LWD) to be placed as spawning substrate in the channel or nearshore a condition of a regulatory permit:

☐ Yes ☐ No

Does a portion of the fill to be placed consist of spawning substrate: ☐ Yes ☐ No

If yes, define the amounts and area to be covered:

The source of spawning substrate to be placed is:

Does a portion of the fill to be placed consist of LWD: ☐ Yes ☐ No

If yes, define the amounts, size, and installation activities:

The source for LWD to be placed is:

#### **1.2.4.15 Bank protection**

Will any bank protection, such as riprap or vegetation, be placed :

☐ Yes ☐ No

If yes, describe the location, the quantity (total amount as well as the amount above and below the OHWM), amount within the wetted perimeter, square footage of coverage, and whether vegetation will be planted within the interstitial spaces of the riprap:

#### **1.2.4.16 In-water work:**

Will any in-water work occur in water bodies containing federally listed fish or marine species: ☐ Yes ☐ No

If yes, describe activities:

The appropriate in-water work window, as approved by WDFW and other agencies is:

From: \_\_\_\_\_ Through: \_\_\_\_\_

Will all in-water work occur during the approved in-water work window: ☐ Yes ☐ No

Provide the anticipated dates of all in-water work:

From: \_\_\_\_\_ Through: \_\_\_\_\_

Will any in-water work occur outside the appropriate in-water work window: ☐ Yes ☐ No

If yes, indicate the number of days and the reason: .

#### **1.2.4.17 Fish Removal/Exclusion**

Will fish removal and exclusion be performed in accordance with the WSDOT Fish Removal Protocols and Standards (Appendix A): ☐ Yes ☐ No

If not, describe the techniques for fish removal, relocation and exclusion from the work area:

Who will carry out the fish removal/exclusion protocol:



#### 1.2.4.18 Stream Bypass/Dewatering or Separation of Work Area from Surface Water

Will work within the streambed be performed in the dry (i.e. channel dewatered): ☐ Yes ☐ No

If yes, indicate how the channel will be dewatered, or if not dewatered how replacement activities will be performed:

- ☐ Ephemeral stream, anticipated to be dry during construction period
- ☐ Stream will be dewatered using a full diversion, and a bypass flume or culvert
- ☐ Stream will be partially dewatered using a partial diversion (e.g. from shore encircling a bent of piling)
- ☐ Stream will be partially dewatered using a cofferdam (e.g. isolating a bridge pier)
- ☐ Stream will be partially dewatered using a steel cylinder (e.g. isolate a single piling)
- ☐ Other (describe)

If bypass or dewatering will occur, describe these activities:

Note: All diversions (full and partial) shall be of sufficient height and bypass systems (e.g. flume, culvert, etc.) of sufficient size to isolate the work area from all anticipated flows during construction.

Describe any treatment of dewatering water (i.e. water removed from the project area):

### 1.2.5 Detailed Project Sequencing and Timeline

Project Activity:	List of Anticipated Equipment Required to Complete Activity	Activity Duration (Number of Hours, Days, Weeks and/or Months) and timing of activities (anticipated dates)
Detour Route(s)		
Access Road(s) and Staging Area(s) (Describe vegetation removal/clearing, if required)		
Fish Removal/Exclusion:		
Stream bypass/dewatering of work area:		
Pavement Removal:		
etc		
etc		
etc		

## 2. Project Vicinity

---

### 2.1 Project Setting and Land Use

Project setting and land uses surrounding the project are briefly described below:

### 2.2 Watershed in which Project is Located

Water Body or Bodies (if doing in-water work):

River Mile (if doing in-water work):                      Tributary to:

WRIA Number:                      Name and Number of 6th Field HUC:

### 2.3 Wetlands

Wetlands surrounding the project are briefly described below (if applicable):

### 2.4 Geography and Soils

Geology and soils surrounding the project are briefly described below (if applicable):

### 2.5 Vegetation

Vegetation communities surrounding the project are briefly described below (if applicable):

### 3. Effects of Project on Environment – Physical, Biological, Chemical Effects

#### 3.1 Direct Effects

Summary of potential direct effects (physical, biological, chemical impacts) that may occur as a result of project actions.

- |  |   |
|--|---|
| <input type="checkbox"/> Changes in Sedimentation/Turbidity                    | <input type="checkbox"/> Changes in Traffic Volume/Congestion |
| <input type="checkbox"/> Impervious Surface Area/Stormwater                    | <input type="checkbox"/> Modifications of Habitat Conditions  |
| <input type="checkbox"/> Removal of Vegetation                                 | <input type="checkbox"/> Dewatering of Stream Channel         |
| <input type="checkbox"/> Noise   | <input type="checkbox"/> Changes in Hydrology/Hydraulics      |
| <input type="checkbox"/> Filling, Removing or<br>Fragmenting/Isolating Habitat | <input type="checkbox"/> Conversion of Habitat to Non-Habitat |
| <input type="checkbox"/> Hazardous Materials                                   | <input type="checkbox"/> Changes in Fish Passage/Migration    |
| <input type="checkbox"/> Artificial Lighting (night work)                      | <input type="checkbox"/> Other (identify)                     |

##### 3.1.1.1 Effects Analysis for :

:

Location/Extent–

Duration/Frequency–

:

Location/Extent–

Duration/Frequency–

:

Location/Extent–

Duration/Frequency–

## 3.2 Indirect Effects

- 1. Does the project create a new facility (e.g., new road or new interchange) or increase the capacity of the existing system?**
- 2. Is new development in the vicinity contingent on the transportation project (i.e., would not occur without the project)?**
- 3. Is any development in the vicinity caused by or dependent on the project?**
- 4. Define the action area.**
- 5. Are proposed or listed species or designated critical habitat present within the action area?**
- 6. If development is contingent or dependent on the project, what potential impacts to the species and habitat will result from the development?**
- 7. What rules or measures are in place to help minimize these potential effects?**
- 8. If development is contingent or dependent on the project, how will this development affect the environmental baseline conditions?**
- 9. If development is contingent or dependent on the project, will this development have potential effects on the species?**
- 10. If development is contingent or dependent on the project, is this development likely to adversely affect the species or critical habitat?**

Summary of the potential indirect effects that may occur as a result of this project

- ☐ Changes in Water Quality
- ☐ Changes in Water Quantity
- ☐ Improved Fish Passage
- ☐ Changes in Hydraulics, Scouring, Flooding
- ☐ Changes in Habitat Conditions
- ☐ Increased Traffic Conveyance
- ☐ Increased Development
- ☐ Other (identify)

☐ Other (identify)

☐ Other (identify)

**3.2.1.1 Effects Analysis for :**

:

**Location/Extent–**

**Duration/Frequency–**

:

**Location/Extent–**

**Duration/Frequency–**

:

**Location/Extent–**

**Duration/Frequency–**

### **3.3 Effects of Interrelated and Interdependent Actions**

#### **3.3.1 Effects Analysis for :**

## 4. Impact Avoidance and Minimization Measures

### 4.1 Minimization Measures

#### 4.1.1.1 Effects Analysis for :

Minimization Measure 1:

Overall effect (potential impact + minimization measure):

Minimization Measure 2:

Overall effect (potential impact + minimization measure):

Minimization Measure 3:

Overall effect (potential impact + minimization measure):

### 4.2 Conservation Measures (if applicable)

All conservation measures that will be employed as part of the project action(s) are described below (if applicable):

### 4.3 Performance Standards (if applicable)

All appropriate performance standards that will be employed as part of the project action(s) are described below (if applicable):

### 4.4 Summary of Avoidance and Minimization Measures

A summary of impact avoidance and minimization measures that will be employed as part of the project action(s) is provided below:

## 4.4.1 Best Management Practices

A summary of BMPs that will be employed as part of the project action(s) is provided below **Table 2. Project Related Best Management Practices (BMPs) Applicable to All Project Action(s)**

### General Project Related Best Management Practices (BMPs)

- |   |   |
|---|---|
| <input type="checkbox"/> A Temporary Erosion and Sediment Control (TESC) Plan and a Source Control Plan will be developed and implemented for all projects requiring clearing, vegetation removal, grading, ditching, filling, embankment compaction, or excavation. The BMPs in the plans will be used to control sediments from all vegetation removal or ground disturbing activities.                                       | <input type="checkbox"/> All equipment to be used for construction activities shall be cleaned and inspected prior to arriving at the project site, to ensure no potentially hazardous materials are exposed, no leaks are present and the equipment is functioning properly.   |
| <input type="checkbox"/> Delineate clearing limits with orange barrier fencing wherever clearing is proposed in or adjacent to a stream/wetland or its buffer.  | <input type="checkbox"/> Construction equipment will be inspected daily to ensure there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum products.  |
| <input type="checkbox"/> Install perimeter protection/silt fence as needed to protect surface waters and other critical areas. Actual location will be specified in the field, based upon site conditions.  | <input type="checkbox"/> Operate construction equipment used for project activities from existing roads or the streambank (above the ordinary high water mark [OHWM]). Construction equipment shall not enter the active stream channel, below the OHWM.  |
| <input type="checkbox"/> Limit site work to daylight hours and comply with local, state and federal permit restrictions.  | <input type="checkbox"/> Should a leak be detected on heavy equipment used for the project, the equipment shall be immediately removed from the area and not used again until adequately repaired.  |
| <input type="checkbox"/> Erosion control blankets will be installed on steep slopes that are susceptible to erosion and where ground-disturbing activities have occurred. This will prevent erosion and assist with establishment of native vegetation.   | <input type="checkbox"/> Project staging and material storage areas shall be located a minimum of 150 feet from surface waters, in currently developed areas such as parking lots or managed fields.  |
| <input type="checkbox"/> The contractor will designate at least one employee as the erosion and spill control (ESC) lead. The ESC lead will be responsible for the installation and monitoring of erosion control measures and maintaining spill containment and control equipment. The ESC lead will also be responsible for ensuring compliance with all local, state, and federal erosion and sediment control requirements. | <input type="checkbox"/> Material that may be temporarily stored for use in project activities shall be covered with plastic or other impervious material to prevent sediments from being washed from the storage area to surface waters.   |
| <input type="checkbox"/> Inspect all temporary and permanent erosion and sedimentation control measures on a regular basis. Maintain and repair to assure continued performance of their intended function. Inspect silt fences immediately after each rainfall, and at least daily during prolonged rainfall. Remove sediment as it collects behind the silt fences and prior to their final removal.                          | <input type="checkbox"/> Temporary storage of excavated materials will not occur within the 100-year floodplain between October 1 and May 1. Material used within 12 hours of deposition will not be considered temporary.  |
| <input type="checkbox"/> Where practicable for soil stability, native vegetation will be planted in areas disturbed by construction activities.   | <input type="checkbox"/> Exposed soils will be seeded and covered with straw mulch after construction is complete. Any temporary construction impact areas will be revegetated with native plants.  |
| <input type="checkbox"/> Hydro-seed all bare soil areas following grading activities, and revegetate all temporarily disturbed areas with native vegetation.  | <input type="checkbox"/> All silt fencing and staking will be removed upon project completion.  |
| <input type="checkbox"/> For projects involving concrete, a concrete truck chute cleanout area shall be established to properly contain wet concrete.   | <input type="checkbox"/> If necessary, a biologist shall re-evaluate the project for changes in design and potential impacts associated with those changes, as well as the status and location of listed species, every 6 months until project construction is completed. Consultation with the Services will be reinitiated if |



☐ Implement a 3-year monitoring plan of revegetated areas to ensure 100% survival of vegetation by stem count at the end of one year and 80% survival by stem count at the end of the 3-year monitoring period.

☐ The contractor shall prepare a Spill Prevention, Control and Countermeasures (SPCC) Plan prior to beginning construction. The SPCC Plan shall identify the appropriate spill containment materials, which will be available at the project site at all times.

☐ For all projects located within a listed fish ESU or DPS that involve 0.4 or more hectare (one or more acres) of clearing, grading or grubbing, a Stormwater Site Plan will be developed and implemented. The Stormwater Site Plan shall include a SPCC Plan, TESC Plan, a Hydraulic Report, a BMP selection form, a water quality discipline report, and a BMP maintenance schedule.

☐ All construction activities will comply with water quality standards set forth in the *Implementing Agreement Between the Washington State Department of Transportation and the Washington State Department of Ecology regarding Compliance with the State of Washington Surface Water Quality Standards* (WSDOT and Ecology 1998) and the *State of Washington Surface Water Quality Standards* (WAC 173-201A). The current WSDOT/Ecology Water Quality Implementing Agreement allows for a mixing zone not to exceed a specified distance downstream of the project corridor based on the characteristics of the waterbody.

☐ For projects that require placement of clean rock below the OHWM, clean rock shall consist of various types and sizes, depending upon application, that contains no fines, soils, or other wastes or contaminants.

☐ Where practicable, excavation activities shall be accomplished in the dry. All surface water flowing towards the excavation shall be diverted through utilization of cofferdams and/or berms. Cofferdams and berms must be constructed of sandbags, clean rock, steel sheeting, or other non-erodible material.

☐ Bank shaping shall be limited to the minimum necessary.

☐ All bank armor shall be inspected to ensure quality control of armor size and cleanliness.

there are changes in project design or changes in listed species.

☐ Before, during, and immediately after isolation and dewatering of the in-water work area, capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as to minimize risk of injury to fish, in accordance with the WSDOT Fish Removal Protocols and Standards (Appendix A).

☐ Seasonal restrictions, i.e., work windows, will be applied to the project to avoid or minimize potential impacts to listed or proposed species based on the HPA issued by the WDFW and consultation with the USFWS and NOAA Fisheries. The appropriate in-water work window for this project is:

From: To:

Other work windows to be applied to this project include the following:

From: To:

For the protection of (identify species)

☐ Streams shall not be used as transportation routes for heavy equipment. Crossings shall be limited to one point and erosion control measures must be utilized where stream banks are disturbed. Crossings shall be constructed of clean rock and shall be sufficiently designed to convey flow without any impairment.

☐ All exposed soils will be stabilized during the first available period, and shall not be untreated for more than seven days without receiving the erosion control specified in the TESC Plan. For western Washington, no soils shall remain unstabilized for more than two days from October 1 to April 30, and for more than seven days from May 1 to September 30.

☐ Revegetation of construction easements and other areas will occur after the project is completed. All disturbed riparian vegetation will be replanted. Trees will be planted when consistent with highway safety standards. Riparian vegetation will be replanted with species native to that geographic region of Washington State.

☐ Perform all work according to the requirements and conditions of the Hydraulic Project Approval (HPA) issued by the WDFW and appropriate concurrence recommendations identified by the federal agencies during ESA consultation. All in-water work will occur during the approved in-water work window, as stipulated by the HPA and ESA consultation.

☐ No paving, chip sealing or stripe painting will occur during periods of rain or wet weather.

☐ If equipment use within the wetted perimeter is permitted the following provisions shall apply:

- |  |  |
|--|--|
| <input type="checkbox"/> There will be no visible sheen from petroleum products in the receiving water as a result of project activities.                                  | <input type="checkbox"/> WSDOT policy and construction administration practice is to have a WSDOT inspector on site during construction. The role of the inspector will ensure contract and permit requirements. |
| <input type="checkbox"/> WSDOT environmental staff will provide guidance and instructions to the onsite inspector to ensure the inspector is aware of permit requirements. | <input type="checkbox"/> Other(s)  |

#### Project Specific BMPs – Bridge Replacement Activities

- |   |  |
|---|--|
| <input type="checkbox"/> Accumulations of bird feces, road grit, sand and loose paint chips shall be removed to the greatest extent practicable prior to disassembling the existing bridge.   | <input type="checkbox"/> Drip tarps shall be suspended below paint platforms to prevent spilled paint, buckets, brushes, etc. from entering State waters   |
| <input type="checkbox"/> Structural cleaning: Pressure washing of bridge structures shall be done using appropriate screened tarping to control and contain paint particles generated by the activity. Concentrated accumulations of bird feces and nests shall not be allowed to drop into the water. This material shall be scraped from the bridge structure and collected and disposed of at an appropriate upland location.                | <input type="checkbox"/> Debris accumulations on the bridge, road surface and within the bridge drains shall be collected or swept up and properly disposed of prior to fresh water flushing. Flushing will involve the use of clean water only, to prevent detergents or other cleaning agents from entering waters of the State. |
| <input type="checkbox"/> The contractor shall protect all inlets and catchments from fresh concrete, tackifier, paving, or paint stripping if inclement weather unexpectedly occurs.  | <input type="checkbox"/> Projects that create more than 467 square meters (5,000 square feet) of new impervious surface area will meet the conditions of the current WSDOT Highway Runoff Manual.  |
| <input type="checkbox"/> Abrasive Blasting Containment: During abrasive blasting of a steel bridge prior to painting, a containment system appropriate for the type and location of the bridge shall be in place and maintained to prevent spent blast media from reaching state waters. Spent blast media shall be collected, sampled, designated for its hazardous material content and disposed of as appropriate for its waste designation. | <input type="checkbox"/> Include other BMPs specific to this bridge replacement project.   |

#### Project Specific BMPs Culvert Replacement Activities

- |   |   |
|---|---|
| <input type="checkbox"/> If necessary, divert stream flow around culvert replacement sites through a temporary culvert, or a trench lined with plastic, rocks, or other suitable material to prevent erosion. | <input type="checkbox"/> Include other BMPs specific to this culvert replacement project. |
| <input type="checkbox"/> All replacement culverts will be designed and installed in accordance with the WDFW manual - Design of Road Culverts for Fish Passage.   | <input type="checkbox"/> Include other BMPs specific to this culvert replacement project. |

#### Project Specific BMPs – Bridge Scour Activities

- |  |   |
|--|---|
| <input type="checkbox"/> The amount and duration of in-stream work with machinery will be limited to the minimum necessary to complete the work. | <input type="checkbox"/> No excavated material will be placed in the existing stream channels. Excavated material will be removed to a location that will prevent its reentry into waters of the State. |
| <input type="checkbox"/> Scour protection shall be designed and installed to prevent impairment of flow.   | <input type="checkbox"/> Scour protection shall not disrupt the movement of fish and or other aquatic life.   |
| <input type="checkbox"/> Fueling of equipment shall not take place within 200  | <input type="checkbox"/> All scour repair armor shall be placed with full   |

feet of surface waters, except small equipment necessary as part of the BMPs for the project

- ☐ Large woody debris which obstructs repair activities shall be retained water-ward of the ordinary high water line and repositioned downstream of the structure.
- ☐ Placement of material for scour protection or repair shall be limited to clean rock, riprap, rock-filled wire baskets or mattresses, or concrete contained by formwork for footing repair. Stabilization materials shall not include gravel, sand, sediments, chert, soil, or other unconsolidated materials. Materials to be discharged shall be free of pollutants, contaminants, toxic materials, hazardous substances, waste metal, construction debris and trash, and other wastes
- ☐ At the end of each workday, the in-water work area, below the OHWM shall contain no pits, potholes, or depressions, to avoid stranding of fish.

**Project Specific BMPs –Pile Driving Activities (including removal of existing piling)**

- ☐ Existing piling are either removed completely or cut a minimum of two feet below the substrate elevation.
- ☐ Replacement piling will be installed in the same general location as the removed piling and will not extend beyond the footprint of the existing structure.
- ☐ Hydraulic water Jets are not used to remove or place piling.
- ☐ Include any additional BMPs specific to pile driving activities.
- ☐ Hydraulic water jets are not used to remove or place piling.
- ☐ The contractor will be advised that eelgrass beds are protected under both State and Federal laws. The contractor will adhere to the following restrictions during the life of the contract. The contractor will be provided with a map delineating eelgrass boundaries. The contractor will not:
  - Place derrick spuds or anchors in the areas designated as "Eelgrass"
  - Shade the eelgrass beds for a period of time greater than three consecutive days during the growing season from March through September.
  - Allow debris or any type of fuel, solvent, or lubricant in the water.

Conduct activities that may cause scouring of sediments within the eelgrass beds or result in sediments transferring out of or into the eelgrass beds

- ☐ Timber piling that break or are already broken below the waterline will be removed with a clamshell bucket. To minimize disturbance to bottom sediments and splintering of piling, the contractor will use the minimum size bucket required to pull out piling based on pile depth and substrate. The clamshell bucket will be emptied of piling and debris

suspension so as not to alter the bed. Armor shall not be dragged or pushed into place.

- ☐ Materials to be discharged shall be free of pollutants, contaminants, toxic materials, hazardous substances, waste metal, construction debris and trash, and other wastes.
- ☐ All equipment used in or around state waters shall be clean, in good repair, and inspected prior to use, to ensure that no fluid leaks are present. This inspection shall take place at least daily while in use to ensure it remains clean and in good repair. Should a leak occur, the equipment shall be immediately removed from the area and not used again until adequately repaired.
- ☐ The drive mechanisms of equipment shall not enter or operate below the ordinary high water line, except when specifically designated by WFDW.
- ☐ If a barge is used for pile driving activities, the barge will not ground out at any time.
- ☐ The holes left by existing piling that are treated with a preservative and are either fully or partially removed will be capped with an appropriate material, such as clean sand or gravel and will match the existing substrate at the site.
- ☐ Include any additional BMPs specific to pile driving activities.
- ☐ Include any additional BMPs specific to pile driving activities.
- ☐ Excess or waste materials will not be disposed of or abandoned waterward of the OHWM or allowed to enter waters of the State.
- ☐ All creosote-treated material, pile stubs, and associated sediments will be disposed of by the contractor in a landfill which meets the liner and leachate standards of the Minimum Functional Standards, Chapter 173-304 WAC. The contractor will provide receipts of disposal to the Project Engineer to ensure proper disposal.

- ☐ A containment boom surrounding the work area will be used during creosote-treated timber pile removal. The boom will collect any floating debris. Oil-absorbent materials will be employed if a visible sheen is observed. The boom will remain in place until all oily material and floating debris have been collected and all sheens have dissipated. Used oil-

on a contained barge before it is lowered into the water. If the bucket contains only sediments, the bucket will remain closed and be lowered to the mud line and opened to redeposit the sediments on the seabed.

- ☐ Whenever activities will generate sawdust, drill tailings, or wood chips from treated timbers, tarps of other containment material shall be used to prevent debris from entering the water. If tarps cannot be used (because of the location or type of structure) a containment boom will be placed around the work area to capture debris and cuttings.
- ☐ The contractor will be required to retrieve any floating debris generated during construction. Debris will be disposed of upland.
- ☐ ACZA-treated wood used for the rub timbers will be treated using the April 17, 2002 revised Amendment to Best Management Practices for the Use of Treated Wood in Aquatic Environments; USA Version-Revised July 1996-Western Wood Preservers Institute.
- ☐ The contractor will be required to ensure that uncured concrete will not come in contact with marine water.
- ☐ Barges will not be allowed to groundout during construction.

absorbent materials will be disposed of in a landfill that meets the liner and leachate standards of the Minimum Functional Standards, Chapter 173-304 WAC.

- ☐ Any debris in the containment boom shall be removed by the end of the workday or when the boom is removed, whichever occurs first. Captured material shall be disposed of in an upland disposal site.
- ☐ A bubble curtain will be used during impact installation or proofing of steel piling.
- ☐ Steel piling will be used. No creosote-treated piling will be used.
- ☐ Will comply with water quality restrictions imposed by Ecology (Chapter 173-201A WAC), which specifies a mixing zone beyond which water quality standards cannot be exceeded. Compliance with Ecology's standards is intended to ensure that fish and aquatic life are being protected to the extent feasible and practical.
- ☐ Other(s)

#### **Project Specific BMPs – Bank Stabilization Activities**

- ☐ Installation of riprap and other bank stabilizing materials will occur from the banks or outside the wetted perimeter as much as possible.
- ☐ Living plant material and large woody debris will be incorporated in the bank protection designs where appropriate.
- ☐ At the end of each workday, the work area within the ordinary high water line shall contain no pits, potholes, or depressions to avoid stranding of fish.
- ☐ The project will follow the ISPG or the HEC 23 (FHWA) recommendations as much as practicable.
- ☐ All stream bank armor shall be placed with full suspension so as not to alter the bed. Armor shall not be dragged or pushed into place
- ☐ All stream bank armor shall be inspected to ensure quality control of armor size and cleanliness

#### **Project Specific BMPs – Safety Improvement Activities**

- ☐ Include additional BMPs specific to Safety Improvement project activities
- ☐ Include additional BMPs specific to Safety Improvement project activities

#### **Project Specific BMPs – Slide Abatement Activities**

- ☐ All management-caused unstable slopes with a high likelihood to deliver sediments to surface waters containing listed species shall be stabilized as soon as practicable.
- ☐ Large woody debris from any landslide will be left in the riparian area, retained for future restoration used by WSDOT or donated to a local watershed group if a need exists.
- ☐ Include any additional BMPs specific to Slide Abatement.
- ☐ Include any additional BMPs specific to Slide Abatement.

## 5. Project Action Area

## 6. Species List

Date obtained species list from the USFWS:

Date obtained species list from the NOAA Fisheries web site:

**Table 3. Species Listed Under the Federal ESA Addressed in this BA:**

Species Common Name ( <i>Scientific Name</i> ) Include ESU or DPS and Critical Habitat	Federal Endangered Species Act Status (i.e., Endangered, Threatened, Proposed or Candidate)
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	

The following species, and/or designated or proposed critical habitat, do occur, or may occur within the county this project is located as indicated by the species list(s) but are not being addressed in this BA for the reasons provided below the table.

**Table 2. Species Listed on the USFWS and NOAA Fisheries Species Lists but Not Addressed in this BA**

Species Common Name ( <i>Scientific Name</i> ) Include ESU or DPS and Critical Habitat	Federal Endangered Species Act Status (i.e., Endangered, Threatened, Proposed or Candidate)
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	
9)	

<b>Species Common Name</b> <i>(Scientific Name)</i> <b>Include ESU or DPS and Critical Habitat</b>	<b>Federal Endangered Species Act Status (i.e., Endangered, Threatened, Proposed or Candidate)</b>
10)	

Provide a one-paragraph explanation regarding why the species or habitats listed on the list were not addressed (please refer to the WSDOT Biological Assessment Preparation Advanced Training Manual for guidance):

# 7. Environmental Baseline within the Project Action Area

## 7.1 Terrestrial Species

.

### 7.1.1.1 Habitat Description:

:  
Habitat Element Condition–

:Habitat Element Condition–

:  
Habitat Element Condition–

## 7.2 Freshwater Aquatic Species

The condition of the **applicable** aquatic habitat elements occurring within the project action area, is summarized in the tables below.:

**Table 4. Overview of the Environmental Baseline Conditions at the Project Action Area Scale and the Watershed Scale**

Diagnostic/Pathway Indicators	Baseline Environmental Conditions		Effects of Project Activities	
	Project Action Area Scale*	Watershed Scale*	Project Action Area Scale	Watershed Scale
<b>Water Quality</b>				
Temperature				
Sediment/Turbidity				
Chemical Contamination/Nutrients				
<b>Habitat Access</b>				
Physical Barriers				
<b>Habitat Elements</b>				
Substrate Embeddedness				
Large Woody Debris				
Pool Frequency				
Pool Quality				



Diagnostic/Pathway Indicators	Baseline Environmental Conditions		Effects of Project Activities	
	Project Action Area Scale*	Watershed Scale*	Project Action Area Scale	Watershed Scale
Off-Channel Habitat				
Refugia				
<b>Channel Conditions/Dynamics</b>				
Width/Depth Ratio				
Streambank Condition				
Floodplain Connectivity				
<b>Flow/Hydrology</b>				
Change in Peak/Base Flows				
Increase in Drainage Network				
<b>Watershed Conditions</b>				
Road Density and Location				
Disturbance History				
Riparian Conservation Areas				

\*For each indicator, indicate whether it is Properly Functioning, At Risk or Not Properly Functioning.

**Table 5. Overview of Environmental Baseline Conditions at the Project Action Area Scale and the Watershed Scale Specific to Bull Trout**

Diagnostic/Pathway Indicators	Baseline Environmental Conditions		Effects of Project Activities	
	Project Action Area Scale*	Watershed Scale*	Project Action Area Scale	Watershed Scale
<b>Subpopulation Characteristics within Subpopulation Watersheds</b>				
Subpopulation Size				
Growth and Survival				
Life History Diversity and Isolation				
Persistence and Genetic Integrity				
<b>Integration of Species and Habitat Conditions</b>				

\*For each indicator, indicate whether it is Functioning Appropriately, Functioning at Risk or Functioning at Unacceptable Risk.

## 7.3 Marine Aquatic Species

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### 7.3.1.1 Habitat Description:

:

**Habitat Element Condition--**

**:Habitat Element Condition–**

**:**

**Habitat Element Condition–**

## 8. Occurrence of Federally Listed and Proposed Species in the Project Action Area

### 8.1 Terrestrial Species

#### 8.1.1 Species 1

Name of Species:

The species is documented as occurring with the project action area: ☐ Yes ☐ No

Source of information pertaining to documented occurrence:

☐ WDFW PHS Data ☐ Federal, State, or Tribal Biologist

Name of biologist:

Agency or Tribe:

Date of Communication:

Phone Number:

☐ Other Source(s) (please cite):

Distance from project site to the nearest documented occurrence:

If species has not been documented, is it likely to occur in the project action area: ☐ Yes ☐ No

Provide justification:

Life history stage(s) that occur within the project action area (i.e., breeding/nesting, roosting, dispersal, rearing, foraging, migration, etc.) include:

The suitability of the habitat within the project action area for the species (if suitable, assume presence) is described below:

The species use of the project action area includes the following (i.e., nesting, roosting, foraging, etc.):

The time of year the species will use, or is likely to occur within the project action area is:

Critical Habitat been Designated or Proposed: ☐ Designated ☐ Proposed ☐ None

Designated or Proposed Critical Habitat lies within the project action area (if applicable):

☐ Yes    ☐ No

Designated or Proposed Critical Habitat within the project action area is described below (if applicable):

## 8.2 Aquatic Species

### 8.2.1 Species 2

Name of Species:

The species is documented as occurring with the project action area: ☐ Yes    ☐ No

Source of information pertaining to documented occurrence:

☐ WDFW PHS Data    ☐ Federal, State, or Tribal Biologist

Name of biologist:

Agency or Tribe:

Date of Communication:

Phone Number:

☐ Other Source(s) (please cite):

Distance from project site to the nearest documented occurrence:

If species has not been documented, is it likely to occur in the project action area: ☐ Yes    ☐ No

Provide justification:

Life history stage(s) that may occur within the project action area (i.e., spawning, rearing, foraging, migration, etc.):

The suitability of the habitat within the project action area for the species (if suitable, assume presence) is described below:

The species use of the project action area includes the following (i.e., run timing, spawning, outmigration, etc.):

The time of year the species will use, or is likely to occur within the project action area is:

Critical Habitat been Designated or Proposed: ☐ Designated ☐ Proposed ☐ None

Designated or Proposed Critical Habitat lies within the project action area (if applicable):

☐ Yes ☐ No

Designated or Proposed Critical Habitat within the project action area is described below (if applicable):

## **9. Effects of Project on Species and Critical Habitats –**

### **9.1 Direct Effect**

#### **9.1.1 Effects Analysis for        :**

**Applicable direct effect 1:**

**Potential for Exposure–**

**General Response–**

**Influence of Minimization Measures on Potential Impacts**

**Anticipated Reponse–**

**Applicable direct effect 2:**

**Potential for Exposure–**

**General Response–**

**Influence of Minimization Measures on Potential Impacts**

**Anticipated Reponse–**

**Applicable direct effect 3:**

**Potential for Exposure–**

**General Response–**

**Influence of Minimization Measures on Potential Impacts**

**Anticipated Reponse–**

### **9.2 Indirect Effects**

## **9.2.1 Effects Analysis for :**

**Applicable indirect effect 1:**

**Potential for Exposure—**

**General Response—**

**Influence of Minimization Measures on Potential Impacts**

**Anticipated Reponse—**

**Applicable indirect effect 2:**

**Potential for Exposure—**

**General Response—**

**Influence of Minimization Measures on Potential Impacts**

**Anticipated Reponse—**

**Applicable indirect effect 3:**

**Potential for Exposure—**

**General Response—**

**Influence of Minimization Measures on Potential Impacts**

**Anticipated Reponse—**

## **9.3 Effects of Interrelated and Interdependent Actions**

### **9.3.1 Effects Analysis for :**

**Applicable action/activity 1:**

**Potential for Exposure—**

**Anticipated Reponse—**

**Applicable action/activity 2:**

**Potential for Exposure—**

**Anticipated Reponse—**

**Applicable action/activity 3:**  
**Potential for Exposure—**

**Anticipated Reponse—**

## **9.4 Cumulative Effects**

All state, local and private actions that are reasonably certain to occur within the project action area are identified below:

The potential cumulative effects to federally listed species that may occur as a result of these actions are described below:





## 10. Effect Determinations

### 10.1 Species 1 (listed species)

Name of Species:

ESU or DPS, if applicable:

The project:

☐ Will have **No Effect** to this species, or ☐ **May Affect** this species

The project will have No Effect on this species because of the following reason(s):

- e.g. no potential for exposure

The project May Affect this species because of the following reason(s):

- e.g. culvert replacement

If the project **May Affect** this species, it is:

☐ **Not Likely to Adversely Affect** this species, or ☐ is **Likely to Adversely Affect** this species.

Provide the reason(s) for this determination:

- e.g. work will occur when stream is dry and fish handling will not be necessary

If Critical Habitat has been Designated or Proposed for this species, indicate the recommended effect determination. For proposed critical habitat, this determination is tentative, should the critical habitat become designated:

- ☐ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☐ May Affect, Likely to Adversely Affect

The primary constituent elements (PCEs) of the critical habitat that will potentially be affected include:

These PCEs will be affected in the following fashion:

If critical habitat is proposed, indicate whether the project will ☐ or will not ☐ destroy or adversely modify critical habitat.

Provide the reason(s) for the determinations, indicated above

## 10.2 Species 2 (proposed species)

Name of Species:

ESU or DPS, if applicable:

The project:

☐ Will **Not Jeopardize** this species, or ☐ **May Jeopardize** this species

The project May Jeopardize this species because of the following reason(s):

- e.g. culvert replacement

If the project **May Jeopardize** this species, it is:

☐ **Not Likely to Jeopardize** the continued existence of this species, or

☐ **Likely to Jeopardize** the continued existence of this species.

Provide the reason(s) for this determination:

- e.g. work will occur when stream is dry and fish handling will not be necessary

If this species becomes listed as either threatened or endangered prior to completion of the project, the provisional determination of effect for the species will be:

☐ May Affect, Not Likely to Adversely Affect, or

☐ May Affect, Likely to Adversely Affect

## 11. References

WSDOT and Ecology (Washington State Department of Transportation and Washington State Department of Ecology). 1998. Implementing agreement between the Washington State Department of Transportation and the Washington State Department of Ecology regarding the compliance with the state of Washington surface water quality standards. February 13, 1998. Available at: <http://www.wsdot.wa.gov/environmental/Programmatics/docs/impagfin.pdf>



**Appendix A**

## **WSDOT Fish Removal Protocols and Standards**

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Federal resource agencies have expressed an interest in the Washington State Department of Transportation (WSDOT) developing a work area isolation/fish removal protocol for agency activities where fish removal may be necessary. The following protocol was developed in an attempt to standardize WSDOT's activities when they are required to remove fish from work areas. This protocol may not apply or may be modified in emergency situations or in certain areas that have unique site-specific characteristics.

## **WSDOT Fish Removal Protocols and Standards**

Isolation of the work area, fish removal and release of fish shall be conducted or directed by a biologist who possesses the competence to ensure the safe handling of all Endangered Species Act (ESA) listed fish, and who is also experienced with work area isolation.

1. **Isolation of the Work Area:** Installation of block nets will occur at predetermined locations, based on site characteristics, to prevent fish and other aquatic wildlife from moving into the work area. When selecting a suitable site look for an area that has desirable attributes such as slower flows, suitable locations for stake and/or gravel bag placement. Whenever conditions allow, the downstream block net shall be placed first. The upstream block net shall then be used as a seine to herd fish from the downstream block net location upstream to the point selected for the upstream block net installation. If feasible, this action will potentially move significant numbers of fish upstream, out of the impact area prior to other removal methods. If herding fish upstream is prohibitive because of flow velocities, installation of the upstream block net first, then the herding of fish downstream and installing the downstream block net may be effective. Both approaches have the added benefit of relocating fish without physically handling them.

Block net mesh size, length, type of material, and depth will vary based on site conditions. The directing biologist on site will base the design of block nets on specific site characteristics such as water depth, velocity and channel width. Typical block net material is 9.5 millimeter stretched mesh. Block nets shall remain in place until in-water work is completed. Block nets will require leaf and debris removal. An individual should be assigned the responsibility of frequently checking the nets to maintain their effectiveness and integrity. The frequency of such checks will be determined on a case-by-case basis, dependent upon the system, season and weather conditions. An individual shall be stationed at the downstream block net continuously during electrofishing sessions, to recover stunned fish in the event they are washed downstream and pinned against the net. Block nets need to be secured along both banks and in-channel to prevent failure during unforeseen rain



events or debris accumulation. Some locations may require additional block net support (examples include galvanized hardware cloth and metal fence posts).

2. **Fish Removal:** The following methods provide alternatives for removal of fish from the area between the block nets. All other aquatic life encountered will also be released at an appropriate site. These methods are given in order of preference and for many locations a combination of methods will need to be applied. The use of visual observation techniques (ex. snorkeling, surveying with polarized glasses or plexiglass bottomed buckets) should be considered for evaluation of removal method effectiveness and to identify specific locations of fish concentrations prior to removal attempts. Site specific project differences will determine the degree of aggressiveness in removal attempts. For instance, in areas where the streambed will be completely dewatered, highly aggressive techniques may be required to remove all fish and prevent death to individual fish due to suffocation and/or dessication. In contrast, large unconfined areas where isolation is impossible and in-water work is limited to a very specific area, total removal of fish is likely impossible and possibly not necessary due to the ability of fish to relocate and avoid disturbance and associated impacts. Fish shall not be sampled during removal activities as this protocol is intended to address fish removal not research. Fish species, number and an age class estimate will be the default information that is documented.
3. **Use of a seine net shall be the preferred method.** The remaining methods shall be used when seining is not possible or to enhance the effectiveness of seining.
  - Seines made from 9.5 mm stretched nylon mesh shall be used to remove fish from the isolated stream reach. Seine design will be dependent upon site-specific characteristics. The on-site biologist will plan seining procedures based on an evaluation of site characteristics.
  - On projects where dewatering will occur, aquatic life will be collected by hand or with dip nets as the site is slowly dewatered.
  - Capture of fish by personnel in water or on shore using hand held nets when in water work will occur without dewatering (typically used in conjunction with seining).
  - Baited minnow traps (typically used in conjunction with seining).

- Electrofishing shall be performed only when other methods have been determined to be unfeasible or ineffective by the directing biologist. Electrofishing studies document injury rates to fish even at low settings. Therefore, use of this method is discouraged when unnecessary. The potential for injury to ESA-listed fish may outweigh the benefit of capture and relocation of all fish present in the work area. Electrofishing research results reveal a trend that as number of vertebrae and spine length increase, injury potential also increases. Therefore, the following guidelines are for juvenile ESA-listed fish and **exclude adult ESA-listed fish**. Areas where redds are present shall not be exposed to electrofishing activity. Capture and removal of adult ESA-listed fish will have to be accomplished using an alternate method other than electrofishing if herding them out of the area to be isolated is not possible. The following conditions shall apply to use of electrofishing as a means of fish removal:

1. Electrofishing shall only be conducted when a biologist with at least 100 hours of electrofishing experience is on site to conduct or direct all activities associated with capture attempts. The directing biologist shall be familiar with the principles of electrofishing including the interrelated effects of voltage, pulse width and pulse rate on fish species and associated risk of injury/mortality. The directing biologist shall have knowledge regarding galvanotaxis, narcosis and tetany, their respective relationships to injury/mortality rates, and have the ability to recognize these responses when exhibited by fish.
2. The following chart shall be used as guidelines for electrofishing in water where the potential to encounter ESA-listed juvenile fish exists. Visual observation of the size classes of fish in the work area is helpful to avoid injury to larger fish by the mistaken assumption that they are not present.

	Initial Setting	Conductivity ( $\mu\text{S}/\text{cm}$ )	Maximum Settings
Voltage	100 V	< 100	1100 V
		100-300	800 V
		> 300	400 V
Pulse Width	500 $\mu\text{s}$		5 ms

3. Seasonal timing restrictions for conducting electrofishing shall be dependent upon the river system, fish composition and an analysis of the life history of documented species. Spawning adults and redds with incubating eggs should not be subjected to the effects of electrofishing. As a general rule, anadromous waters should not be electrofished from October 15 to May 15 and resident waters from November 1 to May 15. It shall

be the responsibility of the directing biologist to research and assess the time of year (for each river segment) when electrofishing is appropriate.

4. Each session shall begin with low settings for pulse width and pulse rate. If fish present in the area being electrofished do not exhibit an appropriate response the settings should be gradually increased until the appropriate response is achieved (galvanotaxis). Conducting electrofishing activity at the minimal effective settings is imperative because as pulse width and pulse rate increase, fish injury rates increase. Minimum effective voltage settings are dependent upon water conductivity and will need to increase as conductivity decreases. Higher voltages elevate the risk of serious injury to fish removal personnel. Use the lowest effective setting for pulse width, pulse rate and voltage to minimize personnel safety concerns and help minimize fish injury/mortality rates.
5. The operator shall avoid allowing fish to come into contact with the anode. The zone of potential fish injury is 0.5 m from the anode. The directing biologist shall determine whether netting shall be attached to the anode. When site conditions allow use of an unnetted anode this method is preferred, due to the fact that this capture technique reduces mortality/injury rates. Techniques employed when using an unnetted anode keep fish farther from the anode and expose them to significantly less time in the zone of potential injury mentioned earlier. Extra care shall be taken near in-water structures, undercut banks, in shallow waters, or high-density fish areas. Voltage gradients may be abnormally intensified in these areas and fish are more likely to come into close contact with the anode. Consider lowering the voltage setting in shallow water sections. When electrofishing areas near undercut banks or where structures may provide cover for fish, use the anode to draw the fish out by placing the activated anode near the area fish are likely present and slowly draw the anode away. Fish experiencing galvanotaxis will be attracted to the anode and will swim away from the structure toward the anode so that they can be netted. This will not work on fish that experience narcosis or tetany. Therefore, fish response should be noted in adjacent areas prior to attempts made near structures. This should help avoid prolonged exposure of fish to the electrical field while in an immobilized state.
6. Electrofishing shall be performed in a manner that minimizes harm to fish. Once an appropriate fish response (galvanotaxis) is noted, the stream segment shall be worked systematically, moving the anode continuously in a herringbone pattern through the

water. Do not electrofish one area for an extended period of time. The number of passes shall be kept to a minimum, will be dependent upon site specific characteristics, and be at the discretion of the directing biologist. Adequate numbers of personnel shall be on-site to minimize the number of passes required for fish removal. Adequate staff to net, recover, and release fish in a prompt manner shall be present. Fish shall be removed from the electrical field immediately and recovered when necessary. Fish shall not be held in the net while continuing to capture additional fish.

7. Carefully observe and document the condition of the captured fish. Dark bands on the body and extended recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit and/or manner in which the electrofishing session is proceeding need adjustment. These characteristics may be an indication that electrofishing has become an inappropriate removal method for that specific site. Specimens shall be released immediately upstream of the block nets in an area that provides refuge. Each fish shall be capable of remaining upright and actively swimming prior to release (see Fish Release section).
8. Electrofishing shall not occur when turbidity reduces visibility to less than 0.5 meters and shall not occur when water temperature is above 18°C or below 4°C.
9. If the water conductivity exceeds 350  $\mu\text{S}/\text{cm}$  electrofishing shall not occur.
  - Pumps used to temporarily bypass water around work sites shall be fitted with mesh screens to prevent aquatic life from entering the intake hose of the pump. The screen shall be installed as a precautionary measure to protect any fish and other wildlife, which may have been missed in the isolation and fish removal process. The screens will also prevent aquatic life from entering the intake hose if a block net should fail. Screens shall be placed approximately 2-4 feet from the end of the intake hose to assure fish are not pinned upon the screen. Screening techniques must be in compliance with Washington State Laws RCW 77.16.220, RCW 77.55.040 and RCW 77.55.070.
  - All fish shall be removed from stream crossing structures within the isolated stream reach. Connecting rod snakes may be used to help move fish out of the structure. The connecting rod snake is made of wood sections approximately three feet in length. When dewatering is to occur a seine may be placed at the downstream end

of the crossing structure. As the water level goes down fish inside the culvert, in theory, will evacuate downstream into the seine that is in place at the outlet. The snake may be wiggled slowly through the pipe to encourage evacuation of fish out of the culvert. Other previously listed capture techniques shall be employed if required.

4. **Fish Release:** For the period between capture and release, all captured aquatic life shall be immediately put into dark colored containers filled with clean stream water. Fish removal personnel shall provide: a healthy environment for the stressed fish; minimum holding periods; and low fish densities in holding containers to avoid effects of overcrowding. Large fish shall be kept separate from smaller prey-sized fish to avoid predation during containment. Water-to-water transfers shall occur whenever possible and the use of sanctuary nets are encouraged. Frequent monitoring of holding container temperature and well being of the specimens will be done to assure that all specimens will be released unharmed. Potential shade areas for fish holding periods and supplemental oxygen shall be considered in designing fish handling operations.

Captured aquatic life will be released in an appropriate area, designated by the directing biologist, that provides cover and flow refuge. The release site(s) will be determined by the directing biologist and may be based on specific site characteristics (flow and cover) and type of fish captured (out migrating smolt, kelt, prespawn migrating adult, etc). More than one site may be designated to provide for the varying migrational needs and to separate prey size fish from larger fish. The directing biologist shall consider fish migration requirements, size classes of fish and duration of work area isolation when designing fish release plans. Each fish shall be capable of remaining upright and have the ability to actively swim upon release. One person shall be designated to transport specimens in a timely manner to the site selected for release. All ESA-listed dead fish shall be preserved and delivered to the pertinent regulatory agency. All work area isolation, fish removal and fish release activity shall be thoroughly documented. Specifically, any injuries or mortalities to ESA-listed or proposed species shall be provided to National Marine Fisheries Service (NOAA fisheries) or United States Fish and Wildlife Service (USFWS), depending on which agency has jurisdiction over that species.

## **In-Water Work Fish Removal Monitoring Report**

Start Date:

End Date:

Waterway:

County:

Construction Activities:

Number of fish observed:

Number of salmonid juveniles observed (include species):

Number of salmonid adults observed (include species):

What were fish observed doing prior to construction:

What did the fish do during and after construction:

Number of fish stranded as a result of this activity:

How long were the fish stranded before they were captured and released to flowing water:

Number of fish that were killed during this activity (include species):

Send Report to:

National Marine Fisheries Service  
Washington State Habitat Branch  
Attn: Transportation Team  
510 Desmond Drive SE, Suite 103  
Lacey, WA 98503



## **Appendix B**

### **Species List from the USFWS and NOAA Fisheries**

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## **Appendix C**

### **Biology of Listed Species**

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# **Biology of Listed Species**

## **Aquatic Species**

### **Species 1**

Name of Species:

Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS), if applicable:

### **Habitat Requirements and Ecology**

## **Terrestrial Species**

### **Species 2**

Name of Species:

### **Habitat Requirements and Ecology**

## **References**

## **Appendix D**

### **Candidate Species Information**

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# Occurrence of Candidate Species in the Project Action Area

Please provide the information below regarding the occurrence, or potential occurrence of candidate species within the project action area. .

## Terrestrial Species

### Species 1

Name of Species:

Is the species documented as occurring with the project action area: ☐ Yes ☐ No

Source of information pertaining to documented occurrence:

☐ WDFW PHS Data ☐ Federal, State, or Tribal Biologist  
Name of biologist:\_\_\_\_\_  
Agency or Tribe:\_\_\_\_\_  
Date of Communication:\_\_\_\_\_  
Phone Number:\_\_\_\_\_

☐ Other Source (please cite):

Distance from project site to the nearest documented occurrence:

If species has not been documented, is it likely to occur in the project action area: ☐ Yes  
☐ No

Provide justification:

Life history stage(s) that occur within the project action area (i.e., breeding/nesting, roosting, dispersal, rearing, foraging, migration, etc.):

Describe the suitability of the habitat within the project action area for the species (if suitable, assume presence):

Describe the species use of the project action area (i.e., nesting, roosting, foraging, etc.):

Describe the time of year the species will use, or is likely to occur within the project action area:

## Aquatic Species

### Species 2

Name of Species:

Is the species documented as occurring with the project action area: ☐ Yes ☐ No

Source of information pertaining to documented occurrence:

☐ WDFW PHS Data ☐ Federal, State, or Tribal Biologist  
Name of biologist:\_\_\_\_\_  
Agency or Tribe:\_\_\_\_\_  
Date of Communication:\_\_\_\_\_  
Phone Number:\_\_\_\_\_

☐ Other Source (please cite):

Distance from project site to the nearest documented occurrence:

If species has not been documented, is it likely to occur in the project action area: ☐ Yes ☐ No  
Provide justification:

Life history stage(s) that occur within the project action area (i.e., breeding/nesting, roosting, dispersal, rearing, foraging, migration, etc.):

Describe the suitability of the habitat within the project action area for the species (if suitable, assume presence):

Describe the species use of the project action area (i.e., nesting, roosting, foraging, etc.):

Describe the time of year the species will use, or is likely to occur within the project action area:

## References



## Effects Analysis

If candidate species do occur within the project action area and effects analysis provided in the BA are applicable to the candidate species, indicate what the potential impacts are that are applicable to the candidate species and where in the BA the reviewer may locate the analysis of the effects (direct and indirect effects, effects of interrelated and interdependent actions and cumulative effects, as appropriate) of these potential impacts:

Are other potential impacts, beyond those identified in the BA likely to occur to candidate species:

☐ Yes      ☐ No

If yes, describe the impact(s):

Will the Conservation Measures, Best Management Practices (BMPs) and Performance Standards included in the BA avoid or minimize all the potential impacts to the candidate species:

☐ Yes      ☐ No

If no, provide additional Conservation Measures, BMPs or Performance Standards to avoid or minimize potential impacts to the candidate species:

## Effects Determination

### Candidate Species 1

Name of Species:

ESU or DPS, if applicable:

The project:

☐ Will have **No Impact** or ☐ **May Impact** individuals, populations, or habitat for this species

The project May Impact this species because of the following reason(s):

- e.g. culvert replacement

If the project **May Impact** this species, it is:

☐ **Not Likely to Significantly Impact** this species; or

☐ **Likely to Significantly Impact** this species.

Provide the reason(s) for this determination:

- e.g. work will occur when stream is dry and fish handling will not be necessary

### Candidate Species 2

Name of Species:

ESU or DPS, if applicable:

The project:

☐ Will have **No Impact** or ☐ **May Impact** individuals, populations, or habitat for this species

The project May Impact this species because of the following reason(s):

- e.g. culvert replacement

If the project **May Impact** this species, it is:

☐ **Not Likely to Significantly Impact** this species; or

☐ **Likely to Significantly Impact** this species.

Provide the reason(s) for this determination:

- e.g. work will occur when stream is dry and fish handling will not be necessary



## **Appendix E**

### **Essential Fish Habitat Assessment**

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# Essential Fish Habitat

## Background

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act to establish new requirements for Essential Fish Habitat (EFH) descriptions in federal fishery management plans and to require federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

The Magnuson-Stevens Act requires all fishery management councils to amend their fishery management plans to describe and identify EFH for each managed fishery. The Pacific Fishery Management Council (1999) has issued such an amendment in the form of Amendment 14 to the Pacific Coast Salmon Plan, and this amendment covers EFH for the Pacific salmon (Chinook salmon, coho salmon and pink salmon) under NOAA Fisheries jurisdiction that will potentially be affected by the proposed action.

EFH for Pacific salmon in freshwater includes all streams, lakes, ponds, wetlands, and other currently viable bodies of freshwater and the substrates within those waterbodies accessible to Pacific salmon. Activities occurring above impassable barriers that are likely to adversely affect EFH below impassable barriers are subject to the consultation provisions of the Magnuson-Stevens Act.

EFH for groundfish and coastal pelagic species includes all waters from the mean high water line along the coasts of Washington upstream to the extent of saltwater intrusion and seaward to the boundary of the U.S. exclusive economic zone (370.4 km.) (PFMC 1998a and 1998b). Designated EFH for salmonid species in estuarine and marine areas includes nearshore and tidally submerged environments within state territorial water out to the full extent of the exclusive economic zone (370.4 km.) offshore of Washington (PFMC 1999).

The Magnuson-Stevens Act requires consultation for all federal agency actions that may adversely affect EFH. EFH consultation with NOAA Fisheries is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Wherever possible, NOAA Fisheries utilizes existing interagency coordination processes to fulfill EFH consultations with federal agencies. For the proposed action, this goal is being met by incorporating EFH consultation to the ESA Section 7 consultation, as represented by this BA.

Indicate which of the Guilds listed below may be affected by project activities:

☐ Pacific Salmon

☐ Groundfish

☐ Coastal Pelagic Species

## Location

The location of the project can be found on the following page of the BA:

## Description of Project Activities

The project activities covered by this assessment have been described in detail previously. Please refer to the following pages of the BA:

## Potential Adverse Effects of Project Activities

The potential effects of project activities have been discussed in detail for some species of salmonids. Please refer to the following pages of the BA:

If impacts to EFH species of either the groundfish or coastal pelagic guilds may occur, provide a discussion of potential impacts of project activities to each of those additional EFH species.

## Conservation Measures and Best Management Practices

Conservation measures and BMPs are included for project activities, as described in the BA. Conservation measures will avoid or minimize potential impacts to existing habitat conditions, including EFH, within the project action area. Conservation Measures are provided on the following pages of the BA:

BMPs are provided on the following pages of the BA:

Are any other BMPs necessary to avoid or minimize impacts to EFH species.

## Conclusions

In accordance with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act, it has been determined that the project will have the following affect effect on EFH for the Guilds identified below:

<input type="checkbox"/> Pacific Salmon	<input type="checkbox"/> No Adverse Affect	<input type="checkbox"/> Adverse Affect
<input type="checkbox"/> Chinook Salmon	<input type="checkbox"/> No Adverse Affect	<input type="checkbox"/> Adverse Affect
<input type="checkbox"/> Coho Salmon	<input type="checkbox"/> No Adverse Affect	<input type="checkbox"/> Adverse Affect
<input type="checkbox"/> Pink Salmon	<input type="checkbox"/> No Adverse Affect	<input type="checkbox"/> Adverse Affect
<input type="checkbox"/> Groundfish	<input type="checkbox"/> No Adverse Affect	<input type="checkbox"/> Adverse Affect
<input type="checkbox"/> Coastal Pelagic Species	<input type="checkbox"/> No Adverse Affect	<input type="checkbox"/> Adverse Affect

Explain the justification for this determination, or refer the reviewer to the BA for additional information:

## References

PFMC (Pacific Fisheries Management Council). 1998a. The Coastal Pelagic Species Fishery Management Plan: Amendment 8.

———. 1998b. Final Environmental Assessment/Regulatory Review for Amendment 11 to the Pacific Coast Groundfish Fishery Management Plan.

———. 1999. Amendment 14 to the Pacific Coast salmon plan, Appendix A: Identification and description of Essential Fish Habitat, adverse impacts, and recommended conservation measures for salmon. Available: <<http://www.psmfc.org/efh.html>>. Accessed: June 18, 2002. Pacific Fishery Management Council. Portland, OR.





## **Appendix F**

### **Environmental Baseline for Aquatic Habitats**

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# Environmental Baseline for Freshwater Aquatic Habitats

Below, describe the current condition of each indicator and the effect of the project to each indicator at both the watershed scale and the project action area scale.

## Water Quality

Refer to 303(d) List (<http://www.ecy.wa.gov/programs/wq/303d/index.html>).

### Water Temperature:

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### Sediment/Turbidity:

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### Chemical Contamination/Nutrients:

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Habitat Access**

### **Physical Barriers:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Habitat Elements**

### **Substrate:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## Large Woody Debris:

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## Pool Frequency:

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## Pool Quality:

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Off-Channel Habitat:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Refugia:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Channel Conditions and Dynamics**

### **Width/Depth Ratio:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### **Streambank Condition:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### **Floodplain Connectivity:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Flow/Hydrology**

### **Road Density and Location:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:



## **Disturbance History:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Riparian Reserves:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **Pathways and Indicators Specific to Bull Trout Only**

The indicators below are specific to bull trout only. The BA Author should complete Table 5 at the end of this section.

### **Subpopulation Characteristics within Subpopulation Watershed**

#### **Subpopulation Size**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### **Growth and Survival**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### **Life History Diversity and Isolation:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### **Persistence and Genetic Integrity:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

### **Integration of Species and Habitat Conditions:**

Briefly describe the current condition of this indicator at both the watershed scale and the project action area scale:

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the watershed scale.**

The project will: ☐ **Improve** ☐ **Maintain** ☐ **Degrade, or** ☐ **Temporarily degrade this indicator at the project action area scale.**

Briefly describe how, at both the watershed scale and the project action area scale:

## **References**



**Attachment 1**

**Modules 1 through 7**

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## **Attachment 1**

# Culvert Replacement

## Existing Culvert:

Is the culvert listed as a barrier in the WSDOT/WDFW culvert inventory: ☐ Yes ☐ No

If yes, indicate the linear feet of potential habitat gain associated with replacing the barrier culvert:

If no, does the culvert appear to be a barrier and what are the parameters that make the culvert appear to be a barrier (i.e. outfall drop, slope, length):

If the culvert is located in a non-fish bearing system, provide an explanation for why the culvert must be replaced and the environmental benefits for doing so:

Description and dimensions of the existing culvert (indicate feet) (e.g. CMP, concrete, closed bottom, arch, etc):

Length:                      Span (diameter if round):                      Rise (if not round):

## Replacement Culvert:

Has the replacement culvert been designed using the WDFW Manual titled *Design of Road Culverts for Fish Passage* (WDFW 2003): ☐ Yes                      ☐ No

If yes, which design option was chosen for the replacement culvert:

- ☐ No Slope Design Option
- ☐ Hydraulic Design Option
- ☐ Stream Simulation Design Option

If no, indicate how the dimensions of the replacement culvert were determined and describe how fish passage will be provided:

Provide the dimensions of the replacement culvert:

Length:                      Span (diameter if round):                      Rise (if not round):

Describe the material (i.e. concrete, steel, aluminum, pvc, etc.) and shape (i.e. round, box, bottomless box, bottomless arch, squash, etc.) of the culvert:

Will any other additional fish passage elements required to be installed in addition to the culvert (i.e. weirs): ☐ Yes                      ☐ No

If yes, describe:

Describe any other in-water work (i.e. weirs, LWD placement, riprap) and the location of the OHWM and the bankfull width:

**Culvert Excavation and Removal**

Describe excavation and removal of the existing culvert. Include the amount of material that will be excavated, storage or disposal of the material, and disposal of the existing culvert:

**Culvert Installation and Backfilling**

Describe installation of the replacement culvert:

Will the fill for the new culvert exceed the original footprint: ☐ Yes ☐ No

If yes, include the amount of material exceeding that which will be required to backfill the new culvert and the source of the material.

Will drop structures, or other streambed elevation control structures be incorporated as part of the project: ☐ Yes ☐ No

If yes, describe:



# Bridge Replacement

## Existing Bridge:

Indicate the type of existing bridge:

- |   |   |
|---|---|
| <input type="checkbox"/> Concrete arch        | <input type="checkbox"/> Pre-tensioned concrete beam                                  |
| <input type="checkbox"/> Concrete box girder  | <input type="checkbox"/> Post-tensioned concrete beam                                 |
| <input type="checkbox"/> Concrete T-beam      | <input type="checkbox"/> Culvert crossing with a span greater than 6 meters (20 feet) |
| <input type="checkbox"/> Steel truss          | <input type="checkbox"/> Floating bridge  |
| <input type="checkbox"/> Timber trestle       | <input type="checkbox"/> Concrete slab  |
| <input type="checkbox"/> Concrete rigid frame | <input type="checkbox"/> Other (describe below)                                       |

Does the existing bridge span any type of surface water: ☐ Yes ☐ No

If yes, describe:

Does any part of the existing bridge occur below the OHWM of the surface water: ☐ Yes ☐ No

If yes, describe:

Describe the materials the existing bridge is constructed of:

Define the area of the existing bridge in square feet or square meters:

## Replacement Bridge:

Indicate the type of the replacement bridge:

- |  |   |
|--|---|
| <input type="checkbox"/> Concrete arch       | <input type="checkbox"/> Pre-tensioned concrete beam                                  |
| <input type="checkbox"/> Concrete box girder | <input type="checkbox"/> Post-tensioned concrete beam                                 |
| <input type="checkbox"/> Concrete T-beam     | <input type="checkbox"/> Culvert crossing with a span greater than 6 meters (20 feet) |
| <input type="checkbox"/> Steel truss         | <input type="checkbox"/> Floating bridge  |
| <input type="checkbox"/> Timber trestle      | <input type="checkbox"/> Other (describe below)                                       |

Describe the new bridge construction sequence:

### **Removal of Existing Bridge**

Check the appropriate method for the removal of the existing bridge:

- ☐ Lowered into the water and dragged out
- ☐ Dismantled segmentally over the water and pieces lowered on to a barge or a shoreline dismantling site
- ☐ Dismantled over water and sections removed by crane to trailers or containers to be towed off-site
- ☐ False work will be built under and around the bridge, and the bridge will be dismantled by sections
- ☐ Other (describe below)

Provide rationale for method being used:

Provide additional information regarding the removal and disposal of the existing bridge. Include discussion on removal of piers, abutments, riprap, etc:

### **Construction of New Bridge**

Describe the installation and location of the new bridge supports:

Describe the construction of the new bridge:

### **Pavement/Bridge Deck Installation**

Describe the installation of the new bridge deck:

Describe any stormwater collection, conveyance and discharge that will be associated with the new bridge:

?

# Bridge Scour

## Existing Bridge Scour:

Describe the general condition of the waterbody upstream and downstream of the site (bends, bank condition, riparian vegetation, LWD, substrate):

Describe inspections of the bridge and when scour was detected:

Describe the scour that is occurring:

Provide the dimensions of the scour hole(s):

## Repair of Bridge Scour:

Describe the technique(s) that will be applied to repair the bridge scour:

Will any permanent in-water structures be added to the stream to repair the scour or prevent future scour: ☐ Yes ☐ No

If yes, describe (include physical dimensions including streambank coverage):

Are the scour prevention or repair techniques that will be applied identified in the BE C23 Manual (FHWA):

☐ Yes ☐ No

Are the scour prevention or repair techniques that will be applied identified in the Integrated Streambank Protection Guidelines (ISPG): ☐ Yes ☐ No

If yes, describe (include ISPG site and reach assessments):

If no, describe techniques that will be used and how these methods were developed and decided upon:

## Bridge Scour Repair Activities

Describe bridge scour repair activities:

Will the bankline require reshaping: ☐ Yes ☐ No  
If yes, describe:

# Pile Driving

## Pile Driving Activities

Are the piling to be installed intended to replace any existing piling: ☐ Yes ☐ No

If yes, describe the existing piling to be removed and replaced (number, size, material and treatment of existing piling. Note: WSDOT standard specs do not allow use of treated wood):

If no, describe the new structure.

How will piles be removed?

☐ Vibratory extractor ☐ Direct pull ☐ Clam shell dredge ☐ Other

Will containment structures be used to minimize turbidity: ☐ Yes ☐ No

Describe method:

General area/habitat where piling will be installed:

☐ Upland ☐ Freshwater ☐ Marine ☐ Estuarine ☐ Other

Describe:

Will piling be installed in-water: ☐ Yes ☐ No

If yes, describe:

Depth of water piles will be installed in:

Number of piling to be installed (since number of piles is normally a guess-add a 10% contingency):

Provide the dimensions of the new piling (diameter, taper, length):

Indicate the material the new piling will be constructed of:

☐ Metal ☐ Wood ☐ Plastic ☐ Concrete ☐ Other

Indicate the type of metal, wood, or other materials (i.e. steel, Douglas fir):

Will the piling be treated to promote preservation: ☐ Yes ☐ No

If yes, describe the treatment:

Describe the substrate where the new piling will be installed:

Does the installation site contain contaminated sediments: ☐ Yes ☐ No

Is it subject to a cleanup action (MTCA or CERCLA): ☐ Yes ☐ No

Define the depth the new piling must be driven to:

Approximate duration for installation of each piling:

Will pile driving activities occur during daylight hours only: ☐ Yes ☐ No

If no, define the hours pile driving activities will occur :

If work occurs at night, describe any lighting that will be required:

When will pile driving occur (time of year, tidal cycle):

Type of pile driver to be used: ☐ Vibratory ☐ Impact ☐ Both

Describe [the pile driver (mounted on a truck or a barge) and anticipated noise levels]

If an impact hammer is used what type is anticipated (drop, diesel, or hydraulic hammer):

If vibratory pile driver is used, will proofing with an impact hammer be required: ☐ Yes ☐ No

#### **Removal and Disposal of Existing Piling**

If applicable, please describe the removal and disposal of any existing piling:

#### **Installation of New Piling**

Describe the installation of new piling:

Structure	Depth (of water)	Piles/structures Removed	Piles/structures installed
		(# piles/type)	(# piles, type, and size)
Totals →			

## Bank Stabilization

### Existing Bank Condition:

Describe the bank, the erosion that is occurring and the cause of the erosion:

If bank erosion is occurring, is the erosion threatening the roadway: ☐ Yes ☐ No

If yes, describe:

If no, define the purpose of the project:

Is the project designed as a ☐ short-term or a ☐ long-term fix? Please describe:

Describe the current conditions of the waterbody in the area of the bank stabilization activities:

### Bank Stabilization:

Will bank stabilization methods incorporate appropriate recommendations as presented in the Integrated Streambank Protection Guidelines (ISPG) or HEC 23 (FHWA): ☐ Yes ☐ No

If yes, describe:

If no, describe why not:

Will bank stabilization require the removal of any existing, previously placed bank stabilization features (i.e. riprap or LWD): ☐ Yes ☐ No

Will bank stabilization create hydraulic changes that may affect bank or channel stabilization elsewhere in the waterbody: ☐ Yes ☐ No

If yes, describe:

### Stabilization of Eroding Banks

Describe the design and the methods for stabilizing eroding banks:



**Repair/Reconstruction of Roadway and Associated Infrastructure (if applicable)**

Will repair of the roadway or associated infrastructure be required: ☐ Yes ☐ No

If yes, describe:

# Safety Improvement

## Safety Improvement Activities

Check the safety improvement activity/activities associated with this project from the list below:

### Safety Improvement Project Activity/Activities

- |   |  |
|---|--|
| <input type="checkbox"/> Signal Improvement             | <input type="checkbox"/> Brushing Road Prism   |
| <input type="checkbox"/> Illumination Improvement       | <input type="checkbox"/> Installing Guard Rail |
| <input type="checkbox"/> Flattening Slopes              | <input type="checkbox"/> Paving Shoulders      |
| <input type="checkbox"/> Removing Trees from Clear Zone | <input type="checkbox"/> Modifying Alignment   |
| <input type="checkbox"/> Vegetation Alteration          | <input type="checkbox"/> Other, Describe       |
| <input type="checkbox"/> Improving Sight Distance       | <input type="checkbox"/> Other, Describe       |
| <input type="checkbox"/> Filling                        | <input type="checkbox"/> Other, Describe       |

### Safety Improvement:

Will the safety improvement(s) occur in the vicinity of water: ☐ Yes ☐ No

If yes, describe the activities, the water body and the distance between the safety improvement(s) and the water body:

Will the safety improvement(s) require the conversion of undisturbed lands to highway or other associated roadway features (i.e. unpaved shoulders): ☐ Yes ☐ No

If yes, define the area to be converted and what the conversion will consist of:

### Installation of Safety Improvement Feature [illumination, signalization, guard rail, etc. (if applicable)]

Describe the installation/construction of the safety improvement(s):

Will a guard rail be installed: ☐ Yes ☐ No

If yes, describe the installation:

## Slide Abatement

### Slide Abatement Activities

Has a slide occurred at the project site: ☐ Yes ☐ No

If yes, describe the slide (cause of slide, amount and type of material, slope, aspect and waters that may have been affected):

If no, are slide abatement activities intended to prevent a slide from occurring or recurring: ☐ Yes ☐ No

If yes, describe the project site and why a slide may occur, or is likely to occur:

Will slide abatement activities prevent a potential slide from entering a water body occupied by any federally listed species: ☐ Yes ☐ No

Will slide abatement activities occur at more than one location: ☐ Yes ☐ No

If yes, describe all areas where slide abatement activities will occur:

### Subsurface Sampling/Testing (if applicable)

Will subsurface sampling/testing occur: ☐ Yes ☐ No

If yes, please describe (areas, number of test sites, depth, etc.):

### Removal of Slide Material (if applicable)

Has slide material been deposited on the roadway: ☐ Yes ☐ No

If yes, please describe (type and amount of material):

Describe the removal and disposal of slide material:

### Recontouring of Land (if applicable)

Will recontouring of land occur as part of the project: ☐ Yes ☐ No

If yes, please describe (amount of area to be recontoured, how it will be recontoured, etc.):

### Vegetation Planting (if applicable)

Will vegetation be planted as part of the project: ☐ Yes ☐ No

If yes, describe (type and number of plantings, etc.):

**Installation of Buttresses (if applicable)**

Will a buttress be installed as part of the project: ☐ Yes ☐ No

If yes, describe (dimensions, material, construction, etc.):

**Installation of Soldier Pile Wall**

Will a soldier pile wall be installed as part of the project: ☐ Yes ☐ No